

LII.—*Note on British Fossil Species of Apodemus.*

By MARTIN A. C. HINTON.

THE fossil remains of wood-mice before me were obtained from deposits of four distinct ages. It now appears that all are members of the *Apodemus sylvaticus* group. Of *A. agrarius* or *Micromys* no trace has been discovered.

1. CROMERIAN (Forest Bed).

Apodemus sp.

Mus sylvaticus, Newton, Vert. Forest Bed, p. 93, pl. xiv. fig. 11 (1882).

Horizon. Upper Freshwater Bed of West Runton, Norfolk.

Mr. Newton figured a fragmentary right ramus from this deposit. Mr. Savin has kindly lent me the material collected by him since 1882, namely, ten more or less imperfect mandibular rami and a fragment of a left maxilla with $\underline{m.1}$ in place; these specimens came from the lower sandy part of the deposit. Mr. White has lent me a left $\underline{m.1}$ and a left $\underline{m.1}$ from the middle or "peaty" portion, while I found myself a right $\underline{m.1}$, with a little of the maxilla adhering to it, in the upper bed or "Monkey gravel."

The three lower cheek-teeth are present in one of Mr. Savin's specimens, and they measure together 3.6 mm. In pattern all the teeth found are indistinguishable from those of *A. sylvaticus*. The material is, however, quite insufficient for fine determination, and merely proves that the Cromerian species was a member of the *sylvaticus* group. It may, later on, prove to be identical with the form next described.

2. EARLY PLEISTOCENE.

Apodemus whitei, sp. n.

"*Mus* sp. allied to *M. sylvaticus*," Hinton, Proc. Geol. Assoc. xxi. p. 492 (1910).

Horizon. The High Terrace Drift of the Thames at Ingress Vale, near Greenhithe, Kent.

Characters. Size and dentition essentially as in *A. sylvaticus*. Maxillo-palatine suture extending forwards to level of antero-internal cusp of $\underline{m.1}$; incisive foramina terminating behind slightly, but distinctly, in advance of the anterior root of $\underline{m.1}$.

The only available material from this deposit is that in the

collection of Mr. G. White. It comprises the greater part of a left maxilla with $\frac{m.1}{m.1}$ in place, a number of detached teeth, including examples of $\frac{m.1}{m.1}$, $\frac{m.2}{m.1}$, and the upper and lower incisor.

The teeth are quite similar in form and size to those of *A. sylvaticus*; in $\frac{m.2}{m.1}$ cusps 1 and x' (see Barrett-Hamilton and Hinton, 'British Mammals,' ii. pl. xxviii.) are normally developed.

In the maxillary fragment the lower portion of the root of the zygoma is present, and the palatal surface, from the hinder margin of the incisive foramen to the maxillo-palatine suture, is complete. The latter suture is deeply digitated, and extends as far forwards as the antero-internal cusp (x') of $\frac{m.1}{m.1}$, instead of being situated opposite the hinder part of this tooth or the front part of $\frac{m.2}{m.1}$, as in recent *sylvaticus*. The posterior margin of the incisive foramen is placed slightly, but distinctly, in front of instead of level with the anterior root of $\frac{m.1}{m.1}$. These two small characters distinguish the fossil from all the many skulls of *sylvaticus* which I have examined, and they serve to show that one cannot assert the fossil to be identical with any living member of the group. It is, therefore, proposed to regard the High Terrace form as a distinct species, for which the name *A. whitei* is used. Having regard to the faunistic agreement which subsists between the High Terrace Drift and the Forest Bed, it is by no means improbable that the fossils from the latter horizon will prove later on to be referable to *A. whitei* also.

3. MIDDLE PLEISTOCENE.

Apodemus sp.

Mus sylvaticus, Hinton & Kennard, Essex Naturalist, vol. xi. p. 347 (1900).

Horizon. The Middle Terrace Drift of the Thames at Grays Thurrock, Essex.

From this deposit numerous detached teeth and a fragment of a right ramus were obtained by Mr. J. P. Johnson and Mr. G. White. These remains agree in size and dental pattern with *A. sylvaticus*, but they do not permit of precise determination.

4. LATE PLEISTOCENE.

(a) *Apodemus sylvaticus*, L.

A large number of remains, indistinguishable in size or

character from those of this species, have been obtained from the fissure-deposit of Ightham, Kent, many British and Irish cavern-deposits of Late Pleistocene age, as well as from several "submerged forests" and other Holocene accumulations. No tolerably complete skull has, so far as I am aware, been found hitherto, and, in the absence of such material, no close comparison with any of the numerous forms of this plastic species can be made.

(b) *Apodemus lewisi*, Newton.

Mus abbotti, Newton, Quart. Journ. Geol. Soc. vol. l. p. 195, pl. xi. fig. 8 (1894); not *M. abbotti* of Waterhouse.
Mus lewisi, Newton, P. Z. S. 1899, p. 331.

Based on lower jaws and parts of skulls from the Late Pleistocene fissure-deposit of Ightham, Kent.

This is a large form which is closely related to, if it be not identical with, *A. flavicollis*, Melchior. Mr. Newton states that the anterior "accessory" cusp of $\overline{m.1}$ is very small or wholly lacking. To this feature no great significance can be given, because the cusp in question is frequently very small, or, in slightly worn teeth, apparently absent in the recent *A. flavicollis*, as also in some races of *A. sylvaticus*. The fossil material is very imperfect, and when fairly complete skulls come to hand they may show differences from either of the two western subspecies of *flavicollis*; in the meantime, it is better to maintain *A. lewisi* as a separate species than to assert that it is identical with *flavicollis*.

I have recently referred to *A. lewisi* specimens from three other British Late Pleistocene deposits, viz. :—

Kent's Cavern, Torquay.—A right ramus (length 16.5 mm., tooth-row 4.3 mm.) in the collection of Mr. Herron. This was obtained from an upper stratum which yielded typical Late Pleistocene rodents (*Ochotona*, *Microtus anglicus*, *ratticeps*, and *Arvicola abbotti*).

Happaway Cave, Torquay.—Anterior part of a skull and a left ramus (cheek-teeth 4.2 mm.); B.M. no. M. 5806 (Pengelly collection).

Wye Cave, Gloucestershire.—Anterior part of a skull; B.M. no. 7789 (collected by Miss D. M. A. Bate).

In both the Happaway and the Wye cave-skulls the teeth are much worn; the interorbital margins are sharp, the superciliary ridges, particularly in the Wye specimen, being sharply defined. The following dimensions show how

closely these fossils agree with the skulls of equally aged individuals of the living British *A. f. wintoni* :—

	Happaway Cave.	Wye Cave.	<i>A. f. wintoni</i> (3 specimens).		
			4.3	4.5	4.4
Interorbital constriction . . .	4.4	4	4.3	4.5	4.4
Nasal width	3.5 ca.	3.3	3.3	3.1	3
Palatal length	14.2	14.4	13.7	14	13.9
Diastema	7.5	7.6	7.4	7.3	7.3
Incisive foramina, length ..	5.7	5.5	5.3	5.5	5
" " width ..	1.8	2.1	1.9	1.8	1.8
Rostral breadth	5.4	5.3	5.5	5.3	5.4
Masseteric plate-width	2.9	2.5	2.8	2.6	2.7
Cheek-teeth	3.8	3.9	4	4	3.7

From the available evidence, it would appear that a *flavicollis*-like form first appeared in Britain in Late Pleistocene times, while the *sylvaticus* group proper had representatives here as far back as the Late Pliocene or Cromerian stage. This would at first sight tend to support Miller's opinion (which I share) that *flavicollis* is really a distinct species from *sylvaticus*; but this support may be negated by the following considerations.

Like *Evotomys*, the *Microtus agrestis* group, and the early species of *Arvicola*, *Apodemus* was present in this country in the earlier part of the Middle Terrace stage; and the forms found in the Grays brick-earth are more or less clearly the descendants of Cromerian ancestors. Some of these old forms appear to have lingered on to the time represented by the Ilford brick-earth. Now, although many small rodent bones and teeth have been collected from the later Middle Terrace deposits of the Thames at Crayford and Erith, no trace of either *Apodemus* or the other rodents named has been found there; the place of these forms appears at that time either to have been unoccupied or else to have been taken by quite new forms. Subsequently, in the Late Pleistocene (Ightham stage), *Evotomys*, the *Microtus agrestis* and *arvalis* groups, *Arvicola*, and the *Apodemus sylvaticus* group (now including a form like *flavicollis*) make a reappearance by forms much more clearly and closely allied to the living species of Western Europe than are those of the older deposits. Such facts caution us against referring the fragmentary fossils from the Forest Bed and earlier Pleistocene to living species.

I would take this opportunity of correcting a silly error in

my paper on British *Apodemus* (Ann. & Mag. Nat. Hist., July 1914). The whole of the last paragraph on p. 130 should be deleted. The young specimen referred to is a house-mouse, the skin figured by accident as that of a young *Apodemus* in the first list (P. Z. S. 1913, p. 836). Later on, through misreading a label, I associated the skin with the skull of a young *Apodemus*.

LIII.—*The Holotype of Nymphon gracilipes, Miers (Pycnogonida)*. By W. T. CALMAN, D.Sc.

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ALTHOUGH several writers have discussed *Nymphon gracilipes*, Miers, since its first description in 1875, no one appears to have re-examined the holotype, and a good deal of unnecessary confusion has therefore gathered round the species. As a result of comparison of the holotype with other specimens in the British Museum collection, the following synonymy is proposed:—

Nymphon gracilipes, Miers.

Nymphon gracilipes, Miers, Ann. & Mag. Nat. Hist. (4) xvi. p. 76 (1875, not later than 1st July); ?? Böhm, MB. Akad. Wiss. Berlin, 1879, p. 170, pl. i. figs. 1-1e; nec *N. gracilipes*, Heller, Denkschr. math.-nat. K. Akad. Wiss. Wien, xxxv. p. 40, pl. iv. fig. 15, pl. v. figs. 1 & 2 (1875, later than 19th July).

Nymphon antarcticum, Miers, Phil. Trans. Roy. Soc. clxviii. p. 211, pl. xi. fig. 7 (1879); nec *N. antarcticum*, Pfeffer, Jahrb. Hamburg. Wiss. Anst. vi. 2^{te} Hälfte, p. 42 (1889).

Nymphon meridionale, Hoek, Rep. Pycnogonida 'Challenger,' p. 43, pl. iii. figs. 4-8 (1881).

Nymphon fuscum, Hoek, t. c. p. 48, pl. iv. figs. 8-11.

Description of holotype.—The specimen is a female, with genital apertures distinct and ova visible within the femora.

Trunk elongated and slender, lateral processes separated by much more than their own diameter. Cephalic segment as long as remaining somites together; neck about two-fifths as wide as anterior dilatation of cephalon. Ocular tubercle not higher than wide, rounded or very obtusely pointed, inclined backward; eyes large.

Proboscis cylindrical, straight, about two-and-a-half times as long as wide.

Abdomen elevated, bluntly pointed.